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ABSTRACT

The first of three sections of this handbook deals with the use of the computer in the learning resource center. A dictionary of computer terms is followed by a description of areas of computer use in the learning resource center. Information for first-time computer users is then provided, including use of the Apple microcomputer and care and use of diskettes and computers. Materials are also offered on purchasing a computer, the facilities and space needed to house a computer, standard equipment for a microcomputer system, and locating software. Other contents include a microcomputer comparison table, a list of educational software sources, sources of educational software information, manufacturers' addresses, list of computer catalogs, and addresses of computer associations. Section II offers a suggested organizational model of a high school learning resource center. Samples of task assignment sheets used in a curriculum are included. Examples of records used to manage learning resource centers are then provided. Section III is a bibliography. (YLB)

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SUPPLEMENT TO LEARNING CENTER HANDBOOK

BY

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AGENCY: Jefferson County Board of Education

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

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Use of the Computer in the Learning

Resource Center

A DICTIONARY OF COMPUTER TERMS

Access - The act of obtaining data stored in the computer system.

Backup - A copy of programs or data that is kept in case the original is accidentally destroyed.

BASIC - (Beginner's All-purpose Symbolic Instruction Code) A programming language frequently used with microcomputers.

Binary - Having two possible states, such as "0" or "1" that correspond to the "on" and "off" states of computer circuitry.

Bit - A binary digit; the smallest unit of information a computer uses.

Byte - A group of eight bits.

CAI - (Computer-Assisted Instruction) The use of computer terminals and courseware in instruction.

Chip - A small rectangle of semiconductor material that contains micro-minaturized electronic circuits.

COBOL - (COmmon Business Oriented Language) A programming language used in business applications.

Computer - A device that can store information, following instructions to manipulate data and solve problems.

Courseware - Computerized instructional materials used for Computer-Assisted Instruction.

CPU - (Central Processing Unit) The section of the computer that controls its overall operation. The CPU carries out, or processes, instruction given to the computer.

CMI - Computer-Managed Instruction.

CRT - (Cathode Ray Tube) A video screen used to display data and grahpics.

Data base - A collection of information that can be stored in the computer.

Data entry device - Equipment that will convert data in human-readable form into a code the computer can understand.

Data processing - Operations performed on data to achieve a particular objective.

Debug - To locate, remove and correct mistakes in a computer program.

Decode - To convert data from a coded form into a human-readable form.

Disc or Disk - See magnetic disk.

Diskette - A thin, flexible platter, similar to a 45 rpm record, coated with magnetic material and used to store information; a floppy disk.

EDP - (Electronic Data Processing) The processing of data mainly by electronic digital computers.

Encode - To convert data in a human-readable form into a code the computer can understand.

File - A block of information that, when combined with others, makes up a group of related data on a disk, similar to files as used in office work.

Firmware - Software that has effectively been made permanent by storing it in hardware.

Floppy disk - See diskette.

FORTRAN - (FORmula TRANslator) A programming language used in scientific and mathematical work.

Hard copy - A printout on paper.

Hardware - The physical equipment, mechanical or electronic, of the computer system.

Input - To transfer data from an input device (such as a terminal or card reader) to the computer's memory.

I/O - (Input/Output) The passage of information into or out of the computer.

K- One thousand, twenty-four (1,024) bytes of information that can be stored in the computer system. A computer that has 16K memory has a capacity of 16 times 1,024 bytes of memory.

Magnetic card - A magnetically coated card on which data can be recorded.

Magnetic disk - A flat, circular plate on which data can be recorded.

Magnetic tape - A tape on which data can be recorded.

Mainframe - The central processing unit of the larger types of computers which many times contains more then one CPU to allow many operations to go on at the same time.

Main storage - The main memory of the computer; stores data that are being processed or used currently.

Memory - Elements in the computer that retain instructions or data used by the central processing unit (CPU).

Menu-Driven - All programs are organized under a master menu; the link from which movement is made to the various programs, each of which contains an exit back to the link. Movement is not possible between programs except through master menu.

Microcomputer - A type of computer that is smaller than both the minicomputer and the mainframe computer.

Microprocessor - A central processing unit on a chip, or a computer system designed around such a device.

Minicomputer - A type of computer which uses one CPU and is suitable for small jobs.

Network - A system of interconnected computer systems; uses terminals for communications.

OCR - (Optical Character Recognition) The use of scanners to read typed or handprinted marks on paper, such as standardized test forms.

Off-line - Not connected to the computer.

On-line - Connected to the computer.

Output - Data transferred from the computer memory to a storage or output device (such as a printer).

Pascal - A computer language used in business and scientific work, named after the French mathematician Blaise Pascal.

Peripheral - An external or remote device in a computer system. Input/output devices, such as keybroads, printers, magnetic tapes and magnetic disks are peripherals.

Program - A set of instructions, arranged in sequential order, telling the computer to do a specific task or to solve a problem.

Remote terminal - A terminal that may be miles away and connected by telephone or other communication lines.

Semiconductor - Material chemically treated to have electronic characteristics.

Soft copy - Output that is not in printed form, such as a display on a video screen or audible output.

Terminal - A device through which data may be entered or received, usually equipped with a keyboard and a display device.

"User-friendly" - Easy to learn to use.

VDT - (Video Display Terminal) See CRT.

Adapted from:

Computers: A Reporter's Guide. Arlington, Va.: American Management Systems, Inc., 1981. (Prepared for the National Press Club's Professional Relations Committee).

Lee, Iva Helen. Data Entry: Concepts and Exercises. New York: John Wiley & Sons, Inc., 1982.

Webster, Tony. Webster's Microcomputer Buyer's Guide. Los Angeles: Computer Reference Guide, 1981.

AREAS OF COMPUTER USE IN THE LEARNING RESOURCE CENTER

According to Leonard O. Nasman, Research Specialist at the National Center for Vocational Education at Ohio State University, there are many areas where computers will have a major effect upon vocational education now and in the future.

These areas are:

A. Computer Literacy

The student will need to become literate in the areas of computer science and electronics. Many vocational areas are beginning to use some form of computers such as in auto parts and machine shop for inventory and cost analysis, in health service careers for patient care, and in commercial foods in quantity food planning and management.

B. Computer-Assisted Instruction (CAI)

Industry is training workers in their areas using CAI as the base for instruction. CAI can increase student competence and decrease instruction time. CAI materials are developed to be used with performance-based, competency-based and individualized instructional materials.

C. Computer-Managed Instruction (CMI)

These materials will monitor a student through a course by listing their progress, and by denoting any potential problems that students may have in their vocational area. CMI can also identify appropriate instructional units based on a student's performance.

D. Computer-Assisted Instruction (CAI) and Computer-Managed Instruction (CMI)

Student progress records can be maintained, freeing the instructor for individual help. These programs can also maintain inventory and personnel files, prepare budgets and even give you a biorhythm chart for your birthday!!

The decision is yours as to the type of computer that is purchased for your learning resource center. One should take into consideration the following questions before the final decision is made:

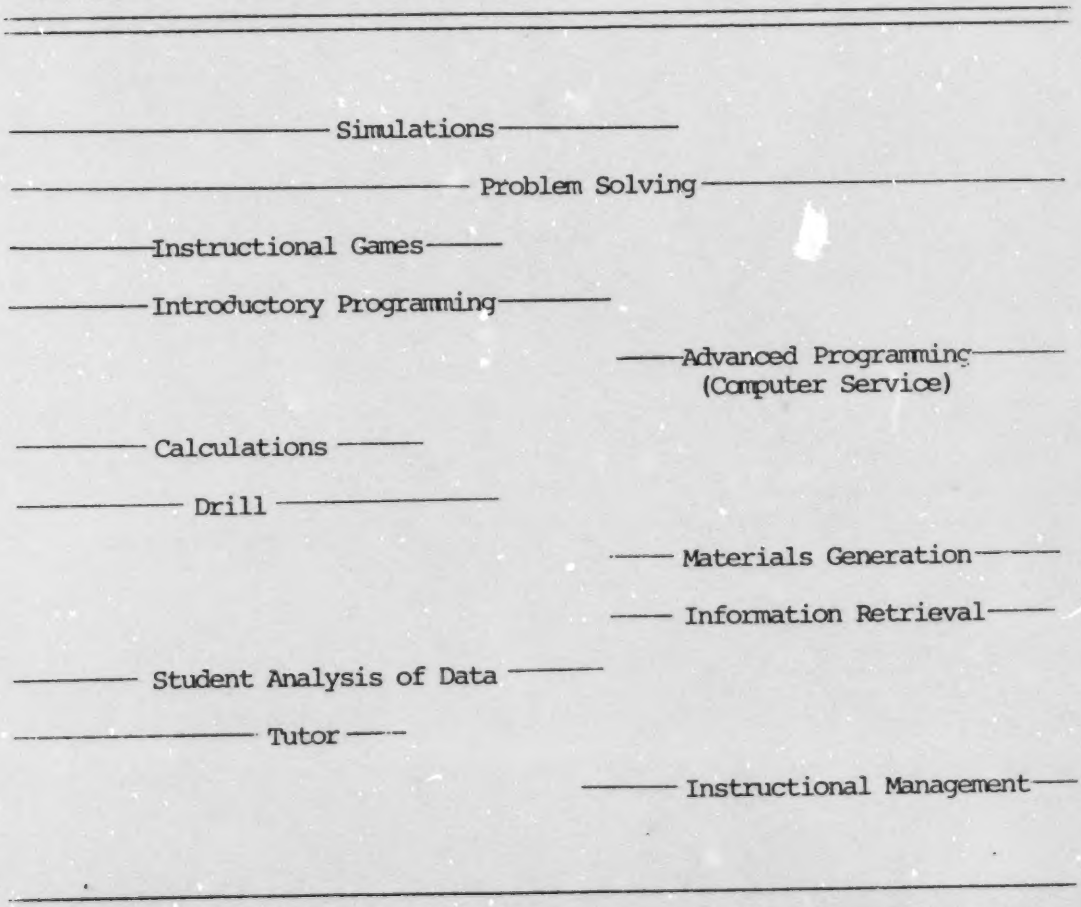
- In what types and kinds of activities will the computer be used?
- What are the hardware components that are necessary for those uses (keyboard, printer, color monitor, etc)?
- What are the types of software that will be purchased for such uses?
- What are the prices for initial investment and then the long term investment?
    - Initial investment - hardware
      software
    - Maintenance
    - Additional purchases
- What type of service program does each brand maintain?
    - In selecting
    - In installation
    - In on-call assistance for use in maintenance
- Where will the computer be located in relation to:
    - Main office?
    - Student accessibility?
    - Security?
- What type(s) of training does the user need to operate the computer?

IMPLICATIONS OF NATURE OF USE UPON HARDWARE SELECTION

How elaborate should your system be? Can you get by with a minimal system, or do you need a full system? Consider the following:

Minimal System	Full System
- 4K RAM - Cassettes - Video Display	- 48K - Disk Storage - Video & Hardcopy - Multiple Input Modes

Capabilities of Minimal and Full Systems.



Note: The following information is from a lecture given at a local inservice to 9th grade students. It contains valuable information for first time computer users, should they be student or instructor.

CAREFUL USE OF THE APPLE

by Donna Smith

It has been called to my attention that many of you have been "playing" with the Apple microcomputer. I don't mean using it but simply playing. I hope you have been enjoying it. If you have, then we want it to stay around for a long time. In order for this to happen, we must take care of it.

Even though manufacturers contend that the small computers have become highly reliable, I still feel the correct state of affairs should be that small computers will operate reliably as long as they have had proper care. For those who have used computers for any length of time, it is sometimes very frustrating.

Basically there are two types of first time computer users:

(1) Those who are completely afraid

or

(2) Those who have a total lack of concern for the system and just jump right in.

There really isn't any reason to be afraid, but there must be some caution. The over-anxious users must control their excitement so as not to ruin the work previously done by some hard working person.

Let's run through the parts of the computer and their functions.

The computer itself is inside the box with a keyboard for input.

The CRT (screen) is for output.

The disk drive is to record programs and data for use later. The reason we need the disk drive is because when the computer is turned off all of the data and programs present are gone because they were stored in a memory call RAM. The language of the computer is BASIC (Beginners All-purpose Symbolic Instruction Code) and is stored in a memory called ROM which is not erased.

When you are preparing to use the Apple:

1. Make sure the computer equipment is turned off, then check plugs. If these are okay, sit down and you are ready to get started.

2. Turn on the machine and CRT.

The Input-keyboard should be familiar to you. Where have you seen it before? - the typewriter. Since it is, with a few exceptions, like the typewriter keyboard, we should type on it as we would a typewriter - not two finger hunt and peck! Although the keyboard seems durable, touch typing is much more efficient and keeps you from having a tendency to poke hard on the keys.

The majority of the problems with a computer are caused by carelessness. Many things which are important are beyond your control as a student (temperature and moisture for example). You, as a student, should be aware of the things you can control.

CHARACTERISTICS OF A DISKETTE

Adapted from:

Don't (or How to Care for Your Computer)

1. A diskett is fragile.

2. Data is magnetically recorded and sensitive to electromagnetic fields.

3. The magnetic surface is exposed to the environment through the openings in the jacket.

4. There is only one way to insert a diskette (correct way).

   -Hold diskette in your right hand between your thumb and index finger. Place thumb on square diskette label. Open disk drive door and slide disk slowly in until there is a small click. Close door.

   -Remove diskette from drive before turning machine off.

   -Place diskette back in its jacket and into its case.

RULES FOR HANDLING THE DISKETTE

Adapted from:

Don't (or How to Care for Your Computer)

1. Handle the diskette with "kid gloves".
2. Do not bend or fold the diskette.
3. Do not touch the exposed magnetic surface of the diskette - the oil and dirt on your fingers may damage the exposed area of the disk.
4. Keep all sources of magnetic fields away from diskettes (magnets and magnetized objects), including televisions monitors and telephones.
5. Keep away from extreme heat, moisture and dust.
6. Insert into disk drive properly.
7. Do not write on the label of the diskette with a pencil or ball point pen.
8. Store diskette in its dust cover in proper container either vertically or horizontally.

TAKING CARE WITH THE COMPUTER

1. Do not turn on computer if plug is not completely in the outlet.

2. Check that all peripherals are connected.

3. Do not move the equipment - shocks and vibrations could dislodge internal boards or chips.

4. Make sure cables are out of the way so that they are not tripped over and endanger equipment.

5. Keep away from chalkboards and other sources of dust.

6. Keep food and drink away. If spilled, they could short out circuits inside; and crumbs jam keys.

7. Keep from extreme temperature changes.

8. Do not plug into electrical outlets with appliances which might draw power or cause fluctuation of current.

9. Be sure everything is turned off when you are finished.

Since you enjoy working with the computer, work hard to keep it safe and in working order. If you don't, you may see it locked up or carted off to the repair shop.

Adapted From: Don't (or How to Care For Your Computer). Rodnay Zaks, Seynex, Inc., 1981, Berkeley, CA.

BUYING THE COMPUTER

THE DECISION IS TO BUY!

Now the computer jargon begins as you read the different catalogs on computers. A new language is learned as you attempt to match your objectives to the type of computer needed for your learning resource center. The following is a listing of words with explanations which will appear in hardware catalogs:

bit: (Acronym for binary digit) - smallest piece of information stored in a computer's memory. Computers only understand combinations of 0's and 1's, and a bit can either be a 0 or a 1.

byte: most commonly a string of bits like 10100011. They represent text and control characters in computer code (machine language). Computer memories are usually specified according to number of bytes they can store.

1K: means 1,024 bytes (16K memory can store 16,384 bytes).

Example from a Magazine Ad:

"A basic model comes with 4 K RAM memory but can be expanded to include a full 48K memory."

What this ad is actually saying is additional memory means much longer programs can be run and also the 48K computer can store much more information than a basic 4K model.

K means very little to the buyer until uses of the computer are considered. The following table will give you a picture of the use of K:

Hardware Requirements of Educational Functions

Function	Memory (RAM)			Disk			Display		Printer	Other Major Peripherals
	8K-16K	16K 32K	32K 64K	5"	8"	hard	color	graphics		
Educational games	3	2	1	2	0	0	2	2	0	0
Beginning BASIC	2	0	0	0	0	0	0	1	0	0
Advanced BASIC	3	2	1	3	0	0	0	2	2	0
LOGO	3	3	3	2	0	0	0	3	0	1 (Turtle)
Machine language	1	1	0	1	0	0	0	0	2	0
Other languages	3	3	2	3	1	0	0	0	3	0
Operating systems	3	3	2	3	0	0	0	0	1	0
Computer electronics	0	0	0	0	0	0	0	0	0	0
Simulations	3	2	1	2	0	0	2	2	0	0
Laboratory instrumentation	3	1	1	2	0	0	0	3	2	3 (lab-Interface)
Word processing	3	3	2	2	2	0	0	0	3	0
Database systems	3	3	2	1	3	2	0	0	3	0
Computer-managed instruction	3	1	2	3	2	1	0	0	2	0
Drill and practice	3	1	0	2	0	0	0	0	1	0
Graphics	3	3	2	2	1	0	2	3	1	1 (Tablet)
Music	3	2	1	2	0	0	0	2	0	2 (Music Synthesizer)
Software development	3	3	3	2	1	1	1	2	3	
Telecommunications	3	0	0	1	0	0	0	0	1	

Key: 0 Not required
1 Required for some applications
2 Required for most applications
3 Necessary

Note: From Adeline Naiman, Microcomputers in Education: An Introduction, Jan., 1982, p. 47. Copyright 1982, Technical Education Research Center, Inc., and Northeast Regional Exchange, Inc. Reprinted by permission.

ADDITIONAL TERMS TO KNOW WHEN PURCHASING A COMPUTER

There are two kinds of memory chips used in personal computer. These are:

- ROM (Read Only Memory) information is permanent and is usually placed in computer by the manufacturer. ROM can tell the computer how to understand a language. (Example: BASIC)

- RAM (Ramdom Access Memory) information is temporary. This stores information such as programs typed into the computer keyboard, information displayed on video screen, and notes needed to generate work on a program. It requires electrical power to remember information. When the power is turned off the information no longer exists.

Peripheral devices store information and programs in a way that the information can be recorded by or played back to the computer, i.e. keyboard, printer, disk drives.

- Cassette-tape standard audio cassette player/recorder as attached to CPU via special connection. Consider the following:

  advantage - relatively inexpensive
  disadvantage - relatively slow/somewhat unreliable
  NOTE: A consideration - you can not go directly to a particular spot on tape; you must wind and rewind until you locate the area you desire.

- Disk Drives rotate the disk very rapidly similar to a record player, a spot on tape can be found at much faster rate.

  (Disk drives use a floppy disk (or diskette) which is a thin flexible bendable plastic square (like a 45 r.p.m. record only square!). It is a fast, efficient, and an effective approach to storage. One disadvantage to the use of a diskette is the high cost. They can be bought in 5" and 8" diameter.

Terminals use typewriter like keyboards as an input component. They vary in style and quality. Some keyboards have actual typewriter keys, shaped for finger-touch.

Other computers have additonal memoric keypad/or set of special function keys.

Monitor - output component which may be a TV-screen (CRT or Cathode Ray Tube). Screens vary in size just as television screen vary; must have good quality terminal to provide 80 columns by 24 lines on the screen. They come in black and white or color.

Printer - an output device which produces printed paper of what is seen on the screen of the monitor RO (Receive only) - called hard copy.

Printing Terminal - can send to CPU and receive and produce printed page.

KRS - (Keyboard Send/Receive)

Interfaces - communication device between CPU and peripheral devices - connected to CPU via chips and connections called input/output parts.

Industry has standardized two interfaces. Theses are the RS232-C Serial interface centronics and the Parallel interface.

Serial interface - transmits or accepts information one bit at a time.

Parallel interface - accepts or transmits information a computer word at a time.

advantage:
Parallel - faster
Serial - standard (more widely used)

All items are tied together by a bus.

Bus - central processing unit, memory, input/output parts, interfaces, etc. Set of parallel wires and connection. The S-100 bus - widely adoped by industry.

Standardized plug - in bus structure mother board (cardcage back plane). Board contains slots into which you can plug printed circuit cards with narrow chips for specific purposes.

Language boards - come with own CPU and/or ROM with some special program. An example of a special program would be an Apple II/Applesoft.

Direct-connect modems send and receive through wire connection to telephone signals.

Modem - (Modulator/demodulator)

Acoustic couplers send messages through mouthpiece and earpiece of telephone.

SPACE FOR THE MICROCOMPUTER LABORATORY IN THE LEARNING CENTER

Although costs for the hardware and the software are high and given first consideration, the facilities and space to house this equipment should be given a priority in the decision process.

The following considerations are: electrical power, environment and furniture.

A. electrical power - although a computer can be plugged into a standard outlet, several precaution should be taken. A single-line should be dedicated to "the computer" and tagged with a sign. Do not plug in other equipment into this circuit such as copiers, coffee pots, or a heater. Make certain the computer is plugged into the outlet firmly. . .a sudden surge of electricity from a half-pulled plug may damage the computer.

B. environment - the room should be clean and relatively free of dust and other particles such as chalk. It is recommended that if it is necessary to have a chalk board, remove the dusty one and use a white board with erasable magic marker.

The temperature should be comfortable for the operator. If the operator is comfortable (60° to 80°) so is the computer. If the temperature is uncomfortable to the user, use a fan to circulate the air. Air-conditioning is the top preference.

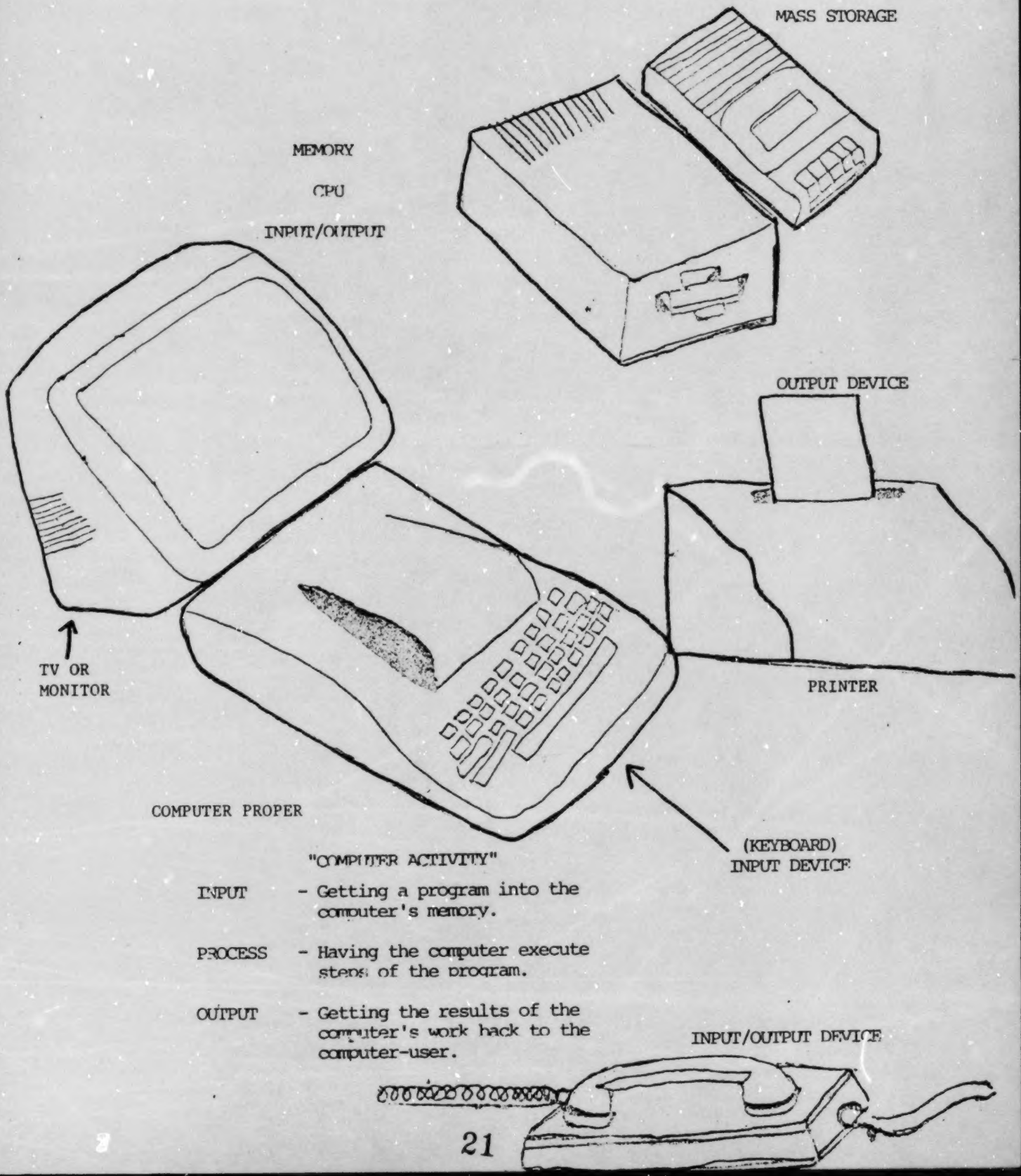
Avoid direct sunlight in the computer area. The floppy disks can be affected by the extreme heat.

Static electricity can be cut by avoiding carpeting in the computer area, by using anti-static mats or sprays, and by keeping the relative humidity level constant at 50% or higher by using a humidifer.

If a telephone is positioned in the room for use with a modem, place the telephone away from the disk drives. The vibration of the phone can damage the disk drives.

Avoid all Food - Keep coffee pots out of the room and post "No Smoking" signs as food and smoke particles can damage the computer.

COMPUTER SYSTEM MODEL



"COMPUTER ACTIVITY"

INPUT - Getting a program into the computer's memory.

PROCESS - Having the computer execute steps of the program.

OUTPUT - Getting the results of the computer's work back to the computer-user.

INPUT/OUTPUT DEVICE

STANDARD EQUIPMENT FOR A MICROCOMPUTER SYSTEM

Input - to put a program into a computer

Input equipment includes:

Keyboard - standard typewriter

Floppy Disk and Disk Drive - small square record - paper envelope

Process - located inside molded case

Output - information comes out of the computer

Output equipment includes:

TV or Monitor displays output
(typed on keyboard, program from cassette tape or floppy disk)

Printer - printed copy

Additional Equipment

Modem - Telephone hook-up to another computer memory

Difference between cassette-based system/disk system is time/money/reliability.

Cassette-based system - use of tape makes time to store or enter program or "find" spot on tape long.

Disk-based system - can pin-point spot on disk relatively fast as in a record and record player.

C. furniture - besides hardware and software, consideration should also be given to the furniture.

The furniture should be sturdy, comfortable to the operator, and of keyboard height. The operator should be able to view the monitor without glare from outside light.

Secure storage should be provided for the hardware and software.

A permanent position should be allocated to the computer. Moving does have a tendency to juggle the inner parts. All furniture should be sufficient for the number of students using the computer; no student should be sitting on the table or crowding around the operator.

The following are suggested sources for furniture:

Radio Shack
400 Atrium-one Tandy Center
Fort Worth, Texas 76102-0009

Deluxe System Desk and Printer Stand with storage drawer

@ Three hundred sixty-nine dollars retail

Stand - slotted top allows for use of printers and permits bottom feed @ One hundred forty-nine dollars retail

- -

Tarmac, Inc.
71 N. Market Street
Asheville, N.C. 28801

Model CIM 3000 - Microcomputer cabinet/study carrel; designed for locked-up storage

@ Three hundred seventy-nine dollars retail

Model CIM - 2000 shipline Student Desk Mobile Microcomputer

@ One hundred eighty-nine dollars retail

- -

SOFTWARE. . .WHAT IS IT?

Software

Software is usually a cassette tape or a floppy diskette.

"Courseware" is the educational jargon used for computer programs with supporting material such as background information, suggested program applications, worksheets, answer keys and sample runs.

Locating software/courseware that is appropriate for your set of circumstances and that will run on your specific computer will take the same steps as in any other search, only longer. The field is very new. Many people are writing poor programs. In some subject areas, such as vocational education and home economics little has been done.

Areas of Consideration

1. Courseware product should be creative and have pedagogical soundness.

2. Courseware product is pedagogically sound, but the teachers lack technical skills necessary to use computer and program to best advantage.

3. Courseware takes into account the following:

    a. learning sequences
    b. cognitive development
    c. theories on learning
    d. appropriate use of sound, color, graphics
    e. reinforcement techniques
    f. causes the least amount of frustration for the user
    g. accurate
    h. free of stereotypes
    i. expresses positive human values

4. User has prerequisite skills needed for courseware program.

5. Courseware is compatible with your personal computer system:

    a. Computer program is for your brand of computer. Some are interchangeable and some are <u>not</u>!
    b. Memory size of courseware as compared to your microcomputer (32K, 64K). DO NOT ORDER PROGRAMS with memory requirements that <u>exceed</u> the memory available on your computer.

c. Is the courseware DOS compatible to your microcomputer DOS?
Does the courseware use a cassette or disk drive?
In order for the courseware to be effective, must it have a color monitor (for graphics, symbols)?

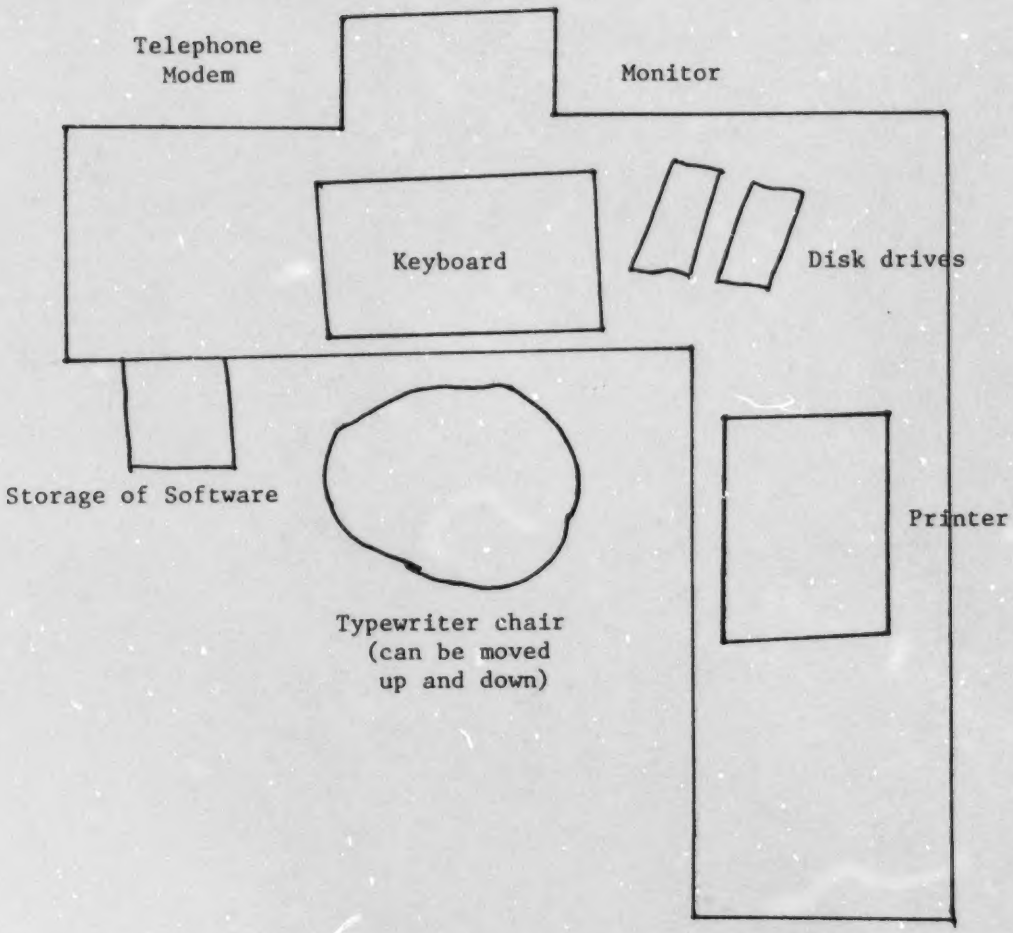
Is the courseware program compatible to the type of printer or computer system?

6. Cost consideration:

a. number of users per program
b. value to classroom
management
administrative
c. long term costs in maintenance and replacement

SUGGESTED PLAN FOR USE OF COMPUTER

IN LEARNING RESOURCE CENTER



DISKETTE-BASED COMPUTERS

MICROCOMPUTER COMPARISON TABLE

Brand Name of Computer System Model Number	System Includes	Memory ROM	Memory RAM	Extras	Suggested Retail Base Price	Additional Purchase	Price
Apple Computer Co. Apple II +	full stroke/52 keys	12 K Applesoft BASIC	48 K	2 game controls Game I/O Connector	$ 1,200.00	Monitor RF Modulator 1st disk drive	$ 645.00
Tandy-Radio Shack 32K Color Computer	Half Stroke Keyboard/53 Keys Cables for Monitor RS-232 Serial Port	EXTENDED BASIC	32K	Operator's Manual 300 p. Tutorial Manual BASIC 214 P. Tutorial Manual - EXTENDED COLOR BASIC	$ 699.00	Monitor Disk Drive 156K	$339.00 599.00
TRS-80 Model 111	2 Disk System Keyboard/Integral 65 Key 12" BW Monitor RS-232 Serial Port 131K Diskette I/O 175K " I/O	BASIC-IN-ROM	48K	Ref Manual Comprehensive Programming Manual	2,295.00		
TRS-80 Model 11	76 Key Prof.type w/ a numeric entry Keypod 12" Monitor BW		64K		3,499.00		
IBM IBM Personal Computer	full stroke/83 keys	M BASIC	48 K		$ 2,200.00	Monitor RF Modulater disk drive	

MICROCOMPUTER COMPARISON TABLE

Brand Name of Computer System Model Number	System Includes	Memory ROM	 RAM	Extras	Suggested Retail Base Price	Additional Purchase	Price
Atari 400	full panel/61 keys RS-232 Serial Port	8 K BASIC Cartridge	16 K	Game I/O Connector	$300.00	Monitor disk drive	$ 600.00
Commodore VIC 20 (32 K)	full stroke/66 keys	16 K BASIC-IN ROM	32 K	Game I/O Connector RF Modulator	$ 600.00	Monitor disk drive	$ 550.00

CASSETTE-BASED COMPUTERS

MICROCOMPUTER COMPARISON TABLE

Brand Name of Computer System Model Number	System Includes	Memory ROM	Memory RAM	Extras	Suggested Retail Base Price	Additional Purchase	Price
Apple Computer Co. Apple 11+	Keyboard/Full Stroke/52 Keys	12K Apple-soft BASIC	16-48K	Ref Manual Applesoft Tutorial Manual	$1,330.00	Monitor I/O Part Cassette I/O Recorder	$200.00
Tandy-Radio Shack TRS-80 Color Computer	Half Stroke/53 Keys RS-232 Serial Port Cables for Monitor Hook-up	8K (16 K ADV. BASIC $99.00)	16K/32K	Ref Manual Cable for TV Hook-up	399.00	Monitor Recorder	399.00 60.00
TRS-80 Model 111	B.W. built in Key-board/Full Stroke 65 Keys Parallel Printer Port	14K BASIC	16K/48K	Operation & basic Language Ref Manual "Getting Started w/TRS-80 BASIC"	999.00	Recorder	60.00
IBM IBM Personal Computer	Keyboard/Full Stroke/83 Keys	M BASIC	16K/64K	BASIC Ref Manual Guide to Operation	1,265.00	Monitor Interface Cassette	345.00 345.00
Atari Atari 400	RF Modulator Key-board/Flat Panel 61 Keys RS232 Serial Port	8K BASIC CARTRIDGE	16K		399.00	Monitor Recorder	100.00
Atari 800	RF Modulator Key-board/Full Stroke 61 Keys RS-232 Serial Port	8K BASIC Cartridge	16/48K		899.00	Monitor Recorder	100.00

MICROCOMPUTER COMPARISON TABLE

rand Name of Computer System Model Number	System Includes	Memory ROM	Memory RAM	Extras	Suggested Retail Base Price	Additional Purchase	Price
ommodore IC 20	RF Modulator Keyboard/Full Stroke/66 Keys	BASIC-IN-ROM	5K/32K		$ 299.00	Monitor Recorder	$75.00
ET 4000	RS-232 Serial Port Monitor-Built In Keyboard/Full Stroke/72 Keys	BASIC-IN-ROM	16K/32K		995.00	Recorder	75.00
BM 8000	Monitor-Built In Keyboard/Full Stroke/72 Keys RS-232 Serial Port Parrallel Printer Port	BASIC-IN-ROM	32K/96K		1,495.00	Recorder	75.00

MICROCOMPUTER COMPARISON CHART

Brand Name of Computer System Model Number	System Includes	Memory		Extras	Price
		ROM	RAM		

List of Educational Software Sources

ACORN Software Products, Inc.
634 No. Carolina Ave.
Washington, D.C. 20003
(202) 544-4259

Software: Foreign Language
Computer: TRS-80 Model 1 & 111
*Price: $29.95

Activity Resources Inc.
P.O. Box 4875
Hayward, CA 94540
(415) 782-1300

Software: Basic Math, Grades 2-12
Computer: TRS-80 & Apple 11
*Price: $35.00 - $175.00

Addison-Wesley Publishing Co.
2725 Sand Hill Rd.
Menlo Park, CA 94025
(415) 854-0300

Software: Math games, Grades 1-12
Also, Adm. pkg.
Computer: Apple 11
*Price: $120.00 - $270.00

Apple Computer, Inc.
10260 Bandley Dr.
Cupertino, CA 94017
(408) 996-1010

Software: Problem solving, Spelling, Grades 1-8, Spelling dic., Grade 4, Geography, Grade 6, Geometry, Grade 7, Music theory & comp., Grades 6-9, Apple LOGO
Computer: Apple 11 & 111
*Price: $50.00 - $200.00

Atari, Inc.
1272 Borregas Ave.
Sunnyvale, CA 94086
(408) 745-5069

Software: General, Jr. High, High School, College
Computer: Atari 400 & 800
*Price: $14.95 - $59.95

Avant-Garde Creations
P.O. Box 30161
Eugene, OR 97403
(503) 345-3043

Software: Authoring system
Computer: Apple 11
Price: $19.95 - $29.95

Basics and Beyond Inc.
P.O. Box 10
Amawalk, NY 10501
(914) 962-2355

Software: Math, Spelling, Geography, Vocabulary & game programs
Computer: TRS-80 1 & 111
*Price: $14.95 - $29.95

Borg-Warner Educational Systems
600 W. University Drive
Arlington Heights, IL 60004
(800) 323-7577
(312) 394-1010

Software: Word structure pkg. Grades 3-6
Computer: Apple 11
*Price: $600.00 - $1,450.00

Brain Box
601 W. 26th St.
New York, NY 10003
(212) 989-3573

Software: Reading, English, Social Studies & American History, Grades 4-12
Computer: Commodore PET, TRS-80 & Apple 1
*Price: $50.00 - $80.00

Charles Mann & Associates
55722 Santa Fe Trail
Yucca Valley, CA 92284
(714) 365-9718

Software: Administrative pkg.
Computer: Apple, TI, TRS-80 & IBM micros
*Price: $49.95 - $299.95

Comm-Data Systems
P.O. Box 325
Milford, MI 48042
(313) 685-0113

Software: Math, Geometry, English, Logic & Reading, Grades K-8
Computer: Commodore PET & VIC-20
*Price: $7.95

COMPress
A Division of Science Books International, Inc.
P.O. Box 102
Wentworth, NH 03282
(603) 764-5831

Software: Administrative pkg.
Computer: Apple 11 plus
*Price: $250.00 - $350.00

Computer Curriculum Corp.
P.O. Box 10080
Palo Alto, CA 94303
(415) 494-8450

Software: Reading, Language Arts & Math, Grades K-12
Computer: Turnkey system

Computer Information Exchange
P.O. Box 159
San Luis Rey, CA 92068
(714) 757-4849

Software: Reading Comp., Math, English & For. Language, Grades 3-8
Computer: TRS-80 Models 1 & 111
*Price: $9.90

Creative Computing (Sensational Software)
39 East Hanover Ave.
Plains, NJ 07950
(800) 631-8112

Software: 47 pkgs. in Math, Language Arts, Science & Social Studies, MECC and Huntington Comp. Proj.
Computer: TRS-80, Apple & Atari
*Price: $24.95

Dynacomp, Inc.
1427 Monroe Ave.
Rochester, NY 14618
(716) 442-8960

Software: Math, Word Recog. & "Hodge Podge" game, Grades K-4. Also teacher's aid program
Computer: Comm. PET, TRS-80 Apple & Stari
*Price: $14.00 - $25.00

Disney Electronics
6153 Fairmont Ave.
San Diego, CA 92120
(714) 281-0285

Software: Reading, Language Arts & Math, Grades K-8
Computer: TRS-80 (Models 1 & 111) & Atari
*Price: $9.95

Educational Activities, Inc.
P.O. Box 392
Freeport, NY 11520
(516) 223-4666

Software: Reading, Language Arts & Math, Grades K-12
Computer: TRS-80 11, Apple 11 plus, Comm. PET
*Price: $11.95 - $245.00

Educational Courseware
10 Bay St., Dept 66
Westport, CT 06880
(203) 227-1438

Software: Physics, Astronomy, Chemistry & Biology, Grades 7-12
Computer: Apple 11
*Price: $24.00 - $32.00

Educational Serv. Management Corp.
P.O. Box 12599
Research Triangle Park, NC 27709
(919) 781-1500

Software: Administrative pkg.
Computer: Apple 11 plus
*Price: $350.00 - $2,000.00

Edu-Soft Steketee Educational Software
4639 Spruce St.
Philadelphia, PA 19139
(215) 747=1284

Software: Math
Computer: Apple 11 & TRS-80
*Price: $14.95 - $19.95

Edu-Ware Services
22035 Burbank Boulevard 223
Woodland Hills, CA 91367
(213) 706-0661

Software: Reading, Spelling, Math & Strategy games
Computer: Apple 11 & Atari (Models 400 & 800)
*Price: $20.00 - $50.00

Hartley Courseware, Inc.
P.O. Box 431
Dimondale, MI 48821
(616) 942-8987

Software: Reading, Language Arts & Math, Grades K-10
Computer: Apple 11 plus
*Price: $26.95 - $93.95

Hayden Book Co., Inc.
50 Essex St.
Rochelle Park, NJ 07662
(201) 843-0550

Software: Math & Adm. pkgs.
Computer: Apple, TRS-80, PET
*Price: $10.95 - $39.95

High Technology Software Products, Inc.
P.O. Box 14665
8001 N. Classen Blvd.
Oklahoma City, OK 73113
(405) 840-9900

Software: Adm. pkgs. & Chemistry simulations, Grades 9-12
Computer: Apple 11 & Atari 800
*Price: $50.00 - $100.00

Information Unlimited Software
281 Arlington Ave.
Berkeley, CA 94707
Berkeley, CA 94707
(415) 525-9452

Software: "Tellstar" Astronomy, Grades 7-12
Computer: Apple
*Price: $40.00 - $80.00

J. L. Hammett Co., Inc.
Hammett Place
P.O. Box 545
Braintree, MA 02184
(617) 848-1000

Software: All subject areas, Grades K-12
Computer: Apple, Comm.PET & TRS-80 (Models 1 & 111)
*$Price: $25.00 - $200.00

K-12 MicroMedia
P.O. Box 17
Valley Cottage, NY 10989
(201) 391-7555

Software: Math, Language Arts, Reading, Science, Adm. pkg., Grades K-12
Computer: Apple, Comm. PET & TRS-80
*Price: $7.00 - $500.00

Krell Software
21 Millbrook Dr.
Stony Brook, NY 11790
(516) 751-5139

Software: Math, English Also, MIT LOGO, Grades 1-12
Computer: Apple, Comm. & Trs-80
*$49.00 - $2,495.00

McGraw Hill
1221 Avenue of the Americas
New York, NY 10020
(800) 223-4180
(212) 997-6194

Software: Computer literacy, Math, "Search" series in Geology, History & Civics, Grades 4-6, Math pkg., Grades 4-8
Computer: TRS-80 (Model 111) & Apple 11 Plus
*Price: $38.25 - $58.95

Med Systems Software
P.O. Box 2674
Chapel Hill, NC 27514
(919) 942-7949

Software: Math, "Human Adventure" & "Money Master" games, Grades 1-12
Computer: TRS-80 (Models 1 & 111)
*Price: $14.95 - $17.95

MicroGnome
5843 Montgomery Rd.
Elkridge, MD 21227
(301) 796-4165

Software: CAI Authoring systems
Computer: TRS-80 (Models 1 & 111)
*Price: $42.95 - $395.00

Micro Learningware
P.O. Box 2134
North Mankato, MN 56001
(507) 625-2205

Software: Math, Spelling, History, Science, Business, Geology & Adm. pkgs., Grades 1-12
Computer: Comm. PET, TRS-80 (Models 1 & 111) Apple 11
*Price: $24.95

Microphys Programs
2048 Ford St.
Brooklyn, NY 11229
(212) 646-0140

Software: Adm. pkgs., Physics, Chemistry, Math, English & Spelling, Grades 7-12
Computer: Comm. PET, Apple 11 & TRS-80 (Models 1 & 111)
*Price: $20.00 - $180.00

Microsoft Consumer Products
10700 Northrup Way
Bellevue, WA 98004
(206) 828-8080

Software: Tuping Tutor, Math skills & Computer languages, Grades 7-12
Computer: TRS-80 (Model 1 & Apple 11 or 111
*Price: $24.95 - $750.00

Milliken Publishing
Computer Dept.
1100 Research Blvd.
St. Louis, MO 63132
(314) 991-4220

Software: Math, Language Arts, Reading Comp., Grammar & Writing skills, Grades 1-12
Computer: Apple 11 Plus, Comm. PET & TRS-80
*Price: $40.00

Milton Bradley Co.
Shaker Road
E. Longmeadow, MA 01028
(413) 525-6411

Software: Math & Language skills, Grades 6-8
Computer: Apple 11
*Price: $44.95

Monument Computer Service
Village Data Center
P.O. Box 603
Joshua Tree, CA 92252
(800) 854-0561
(800) 432-7257 (CA)

Software: Adm. pkgs., Spelling & Math, Grades 1-8
Computer: Apple 11 Plus
*Price: $29.95 - $500.00

MUSE Software
330 N. Charles St.
Baltimore, MD 21201
(301) 659-7212

Software: Math lessons, "The Voice" & "Robot War" Games & Speech processing, Grades K-12
Computer: Apple 11 Plus
*Price: $39.95 - $175.00

Powersoft
P.O. Box 157
Pitman, NJ 08701
(609) 589-5500

Software: Foreign Language drills, Word games, Grades 4-12
Computer: Apple 11 & Apple 11 Plus
*Price: $14.95 - $34.95

Program Design, Inc.
11 Idar Court
Greenwich, CT 06830
(203) 661-8799

Software: Math, Language Arts & Programming, Grades K-12
Computer: Atari, Apple 11, TRS-80 (Models 1 & 111) & PET
*Price: $16.95 - $79.95

Programs for Learning, Inc.
P.O. Box 954
New Milford, CT 06776
(203) 355-3452

Software: Chemistry pkgs., high school
Computer: TRS-80, Comm. PET & Apple
*Price: $150.00

Radio Shack Education Division
1600 One Tandy Center
Fort Worth, TX 76102
(817) 390-3832

Software: Math, Reading, Language Arts, Grades K-12
Computer: TRS-80 (Models 1 & 111) & Radio Shack Color Computer
*Price: $40.00 - $500.00

Random House
High School Division
2970 Brandywine Rd., Suite 201
Atlanta, GA 30341
(404) 455-8570

Software: Math, Reading, Language Arts & Management syst. Grades K-12
Computer: TRS-80 & Apple 11

Scott Foresman & Co.
1900 East Lake Ave.
Glenview, IL 60025
(312) 729-3000

Software: Reading, Math, Music & Speech, Grades K-8, Also, Adm. pkgs.
Computer: T199/4A & Apple
*Price: $39.00 - $450.00

SRA (Science Research Associates)
155 North Wacker Dr.
Chicago, IL 60606
(800) 621-0664
(312) 984-2053

Software: Math, Language Arts, Computer Literacy & Classroom Management, Grades 1-12
Computer: Apple, TRS-80, IBM, Atari & TI
*Price: $60.00 - $525.00

Sterling Swift Publishing Co.
1600 Fortview Rd.

Austin, TX 78704
(512) 444-7570

Software: Math, Grades-3-12
Computer: Apple, TRS-80 & Comm. PET
*Price: $69.00 - $495.00

THESIS (T.H.E.S.I.S.)
P.O. Box 147
Garden City, MI 48135
(313) 595-4722

Software: Language Arts & Math, Grades K-8
Computer: Atari & Apple 11
*Price: $15.00 - $25.00

Tycom Associates
68 Velma Ave.
Pittsfield, MA 01201
(413) 442-9771

Software: Math, English/Voc., Languages & game programs, Grades 7-12
Computer: Comm. PET
*Price: $15.95 - $29.95

Unicom
297 Elmwood Avenue
Providence, RI 02907
(401) 467-5600

Software: Language/reading development, Adm. programs, Grades K-college.
Computer: Apple 11
*Price: $250.00

*Suggested or Present Price

Sources of Educational Software Information

Magazines

Classroom Computer News
Subscription Dept.
51 Spring St.
Watertown, MA 02172

1 yr	6 issues	$16.00

1983 CCN Directory of Educational Computing Resources

1-4 copies	9.95

If purchase subscription & directory

1 yr	6 issues	16.00
	directory	6.98

- -

Electronic Learning
Scholastic, Inc.
902 Sylvan Ave.
Englewood Cliffs, NJ 07632

Introductory Rate

1 yr	8 issues	$15.00

- -

Electronic Education
Electronic Communications, Inc.
Suite 220
1311 Executive Center Dr.
Tallahassee, FL 32301

1 yr	9 issues	$18.00

- -

Popular Electronics
P.O. Box 2774
Boulder, Colorado 80321

1 yr	12 issues	$11.97

- -

Magazines, con't.

Creative Computing
P.O. Box 5214
Boulder, Colorado 80321

1 yr 8 issues $13.97

- -

Peelings II, Inc.
P.O. Box 188
Las Cruces, NM 88004

Magazine of Apple Software Evaluation

1 yr 9 issues $21.00

- -

Personal Computing
Box 2940
Boulder, CO 80322

1 yr 12 issues $11.97

- -

Journal of Courseware Review
P.O. Box 28426
San Jose, CA 95159

- -

The Mathematics Teacher
1906 Association Dr.
Reston, VA 22091

- -

Purser's Magazine
P.O. Box 466
El Dorado, CA 95623

- -

Magazines, con't.

The Computing Teacher
Dept of Computer & Information Science
University of Oregon
Eugene, Oregon 97403

1 yr 9 issues $20.00

- -

inCider
Wayne Green, Inc.
P.O. Box 911
Farmingdale, NY 11737

1 yr 12 issues $19.97

- -

SOME MANUFACTURERS' ADDRESSES

Apple Computer, Inc.
10260 Bandley Dr.
Cupertino, CA 95014
(408) 996-1010

Radio Shack/Tandy
1300 One Tandy Ctr.
Ft. Worth, TX 76102
(817) 390-3011

IBM Corp.
P.O. Box 1328
Boca Raton, FL 33432
(305) 998-6007

Atari Consumer Div.
1265 Borregas Ave.
Sunnyvale, CA 94086
(408) 745-2038

Commodore
950 Rittenhouse Rd.
Norristown, PA 19401
(215) 337-7100

Incomplete List of Computer Catalogs

TRS-80 Educational Software Sourcebook, 1st Ed
Radio Shack
Education Division
400 Atrium
One Tandy Center
Fort Worth, TX 76102

Cat. No. 26-2756 $4.95

Vocational Education Materials
- Advanced Air Traffic Controller
- Aircraft Instrument Approach Simulator
- Auto Mechanics
- Basics of Servomechs & Operational Amps
- General Shop Practices
- Gregg Personal Keyboarding
- Morse Code Trainer
- Typing Tutor, Typing Teacher

* *

Sunburst Communications
Room VH5
39 Washington Ave.
Pleasantville, NY 10510

- Math - Apple, PET, Atari, TRS-80 (Model III
- Science
- Language Arts
- Library Skills
- Music
- Thinking Skills
- Starter Pack (programs in pkg. for discount) Apple, Atari, PET

* *

SVE (Society For Visual Education, Inc.)
1345 Diversey Pkwy.
Chicago, IL 60614

Microcomputer Software K-12

SVE - Cont'd.

Vocational/Consumer

Income Meets Expenses
You Can Bank On It
Money Management Assessment Series
Job Readiness
Poison Proof Your Home
Home Safe Home

* *

Scholastic Microcomputer Instructional Materials
P.O. Box 2002
904 Sylvan Ave.
Englewood Cliffs, N.J. 07632

Apple, Pet, TRS-80, TI 99/4, Atari

* *

Pleasantville Media
Suite B-5
P.O. Box 415
Pleasantville, NY 10570

Computing Your Way to Better Nutrition
Earth and Life Sciences
Survival Math
Mastering Parts of Speech

* *

Software

Item	Catalog
Math Education	
Jr. & Sr. High Programs Administration, Classroom Math Intro. Calculus Programming Aids	Fisher Scientific Company Educational Materials Div. 4901 W. LeMoyne St. Chicago, IL 60651 (800) 621-4769
Software for Models of Computers	
Fisher/Commodore Pet	

* *

Item	
Business Education	
Word Processing Accounting Data Base Mgt. Electronic Worksheet Dow-Jones Portfolio Mgt. Classroom, Administration	Fisher Scientific Company Educational Materials Div. 4901 W. LeMoyne St. Chicago, IL 60651 (800) 621-4769
Software for Models of Computers	
Commodore Pet	

* *

Item	
Science Education	
Physics Biology Chemistry Math for Science Classroom, Administration	Fisher Scientific Company Educational Materials Div. 4901 W. LeMoyne St. Chicago, IL 60651 (800) 621-4769
Software for Models of Computers	
Fisher/Commodore Pet	

Minnesota Educational Computing Consortium (MECC) - formed to assist users and educational member systems within Minnesota in the coordination and utilization of computing resources and to provide current computing methods and materials.

Reference Material
Training films
Agriculture
Business
Elementary
Mathematics
Music
Science
Social Studies
Misc.
Dr. Ed.
Administrative

Catalog

Minnesota Educational
Computing Consortium
Publications & Programs
2520 Broadway Dr.
St. Paul, MN 55113-5199

(612) 376-1118

Apple II, DOS 3.3
32K = Applesoft in ROM

Printer

Apple's parallel, serial communication card

* *

Basic Living Skills

Everyday Math
Job Readiness - Assessment & Dir.
Income Meets Expenses
You can Bank on It
Money Management Assessment
Comparative Buying
Home Safe Home
Poison Proof Your Home

Microcomputer Ed. Programs
Custom Curriculum Design
9613 Lyric Lane
Jeffersontown, KY 40299

(502) 267-1458

Apple II Plus
Apple II w/"Applesoft" in ROM 48K
and one disk drive

Catalog

Reading-Language Arts
Mathemetics
Create Own Courseware

Hartley
Custom Curriculum Dealer
9613 Lyric Lane
Louisville, KY 40299

(502) 267-1458

48K Apple II w/Applesoft in ROM
Boot on 3.2 or 3.3 DOS

* *

SVE' 82
Micro Computer Software
Catalog K-12

Reference Skills
Computer Literacy
Math
Business/Consumer
Science
Books
Administrative
Social Studies
Reading
Grammer
Vocabulary
Spelling
Games

Software for
Models of Computers

Apple
PET
TRS-80

SVE
Society for Visual Ed., Inc.
A Business Corporation
1345 Diversey Parkway
Chicago, Ill. 60614
(800) 621-1900

* *

Scholastic
Micro Computer Instructional Materials

Mathematics
Science
Language Arts
Social Studies
Foreign Language
Music
Computer Literacy
Programming Aids - Students
Teachers
Admin.

Scholastic Software
P.O. Box 2002
904 Sylvan Ave.
Englewood Cliffs, N.J. 07632

Scholastic - Cont'd

Software for
Models of Computers

Apple Programs
Pet "
TRS-80 "
TI-99/4 "
ATARI "

* *

Consumer Series
Personal Money Series
Ware Series
People Series
Computer Literacy
Theory & Application
Languages: Basic
Apple Machine-Language
Pascal

TRS-80 Model III, II
Apple II
Commodore CBM

Edupac, Inc.
231 Norfolk St.
P.O. Box 72
Walpole, MA 02081

* *

Instant Software
Peterborough, N.H. 03458

* *

VanLoves
Apple II/III Software Directory 1981

Vital Info., Inc.
350 Union Station
Kansas City, MO 64108

(913) 384-3860
(800) 255-5119

Some Addresses of Computer Associations

Associations for Computing Machinery
1133 Avenue of the Americas
New York, NY 10036

Boston Computer Society
c/o Bonnie Turrentine
Education Resource Exchange
Three Center Plaza
Boxton, MA 02108

CONSUIT
P.O. Box 338
Iowa City, IA 52240

Dresden Associates
c/o Bob Haven
P.O. Box 246
Dresden, ME 04342

Florida Center of Instructional Company
College of Education
University of South Florida
Tampa, FL 33620

International Council for Computers in Education
c/o Computing Center
Eastern Orgon State College
La Grande, OR 97850

MARCK
280 Linden Ave.
Brandord, CT 06082

Northwest Mississippi Teacher Center
136 N. Front St.
Senatobis, MI 38668

National Science Teachers Association
1742 Connecticut NW
Washington, D.C. 20009

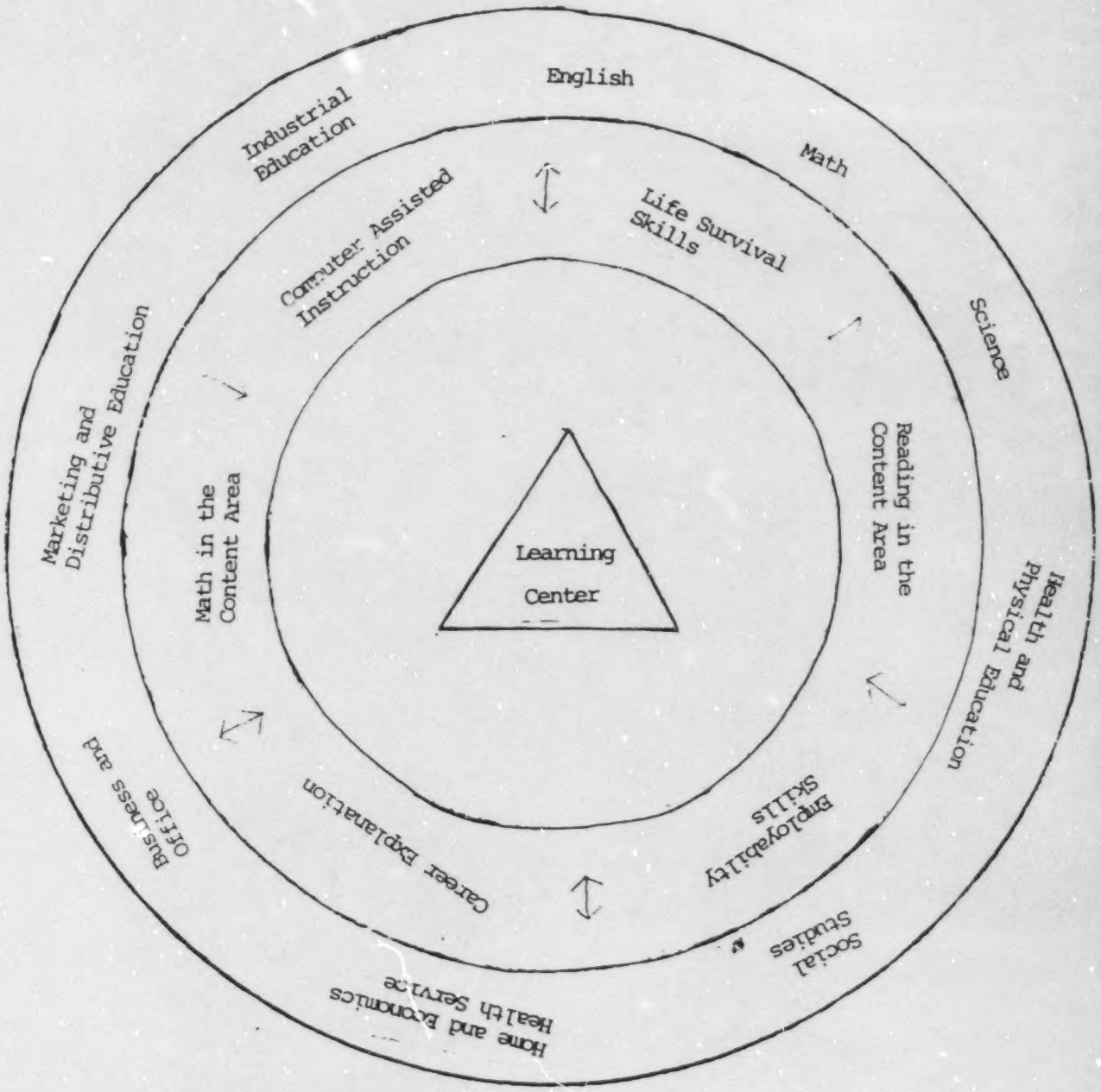
Some Addresses of Computer Associations

Opportunities for Learning
Department L2
8950 Lurine Ave.
Chatsworth, CA 91311

ZERO PAGE PROJECT
2380 Naegele Road
Colorado Springs, CO 80907

Section II: SUGGESTED ORGANIZATIONAL MODEL OF SECONDARY LEARNING RESOURCE CENTER IN A SPECIFIC SCHOOL

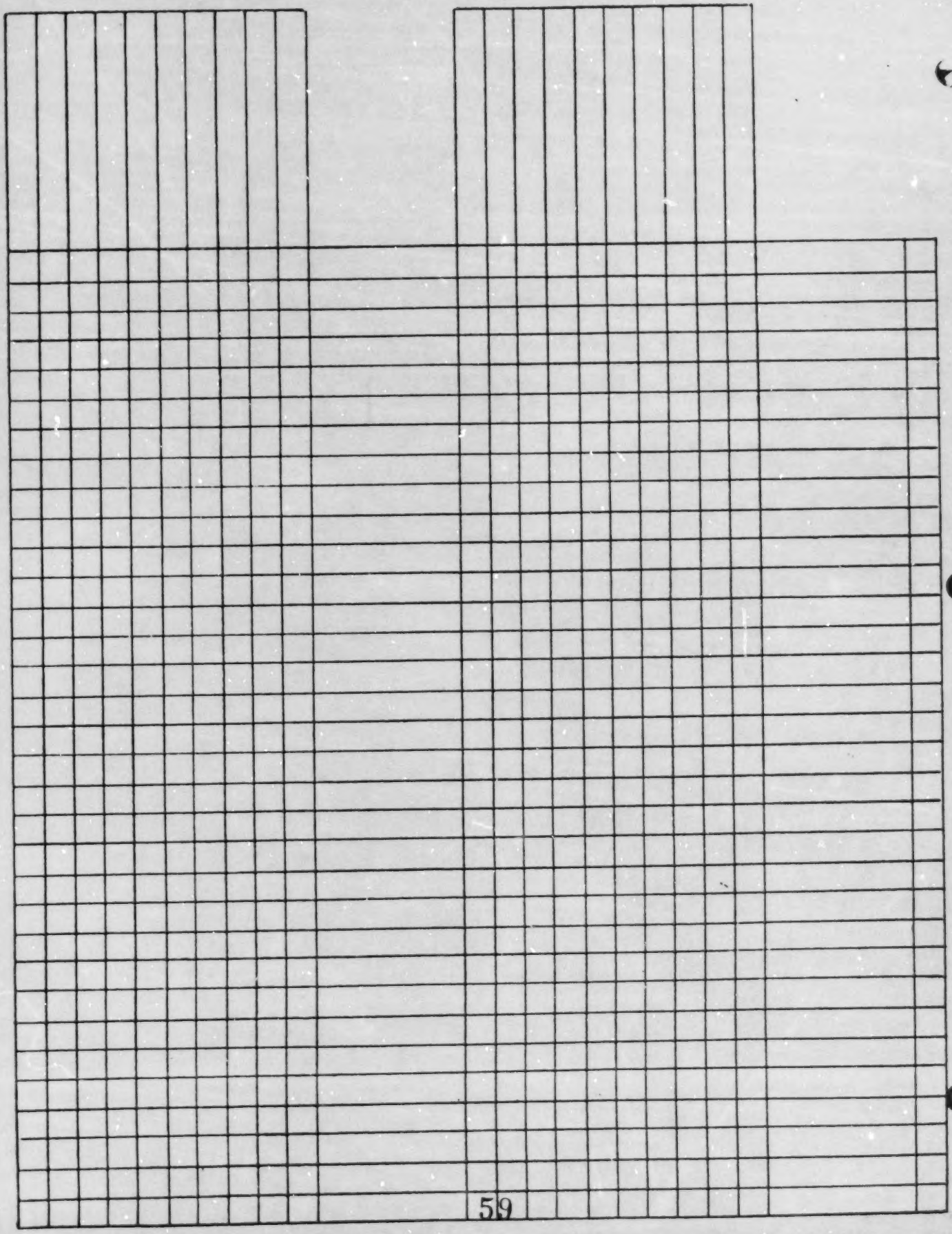
Model Used at Fairdale High School
Jefferson County Public Schools



Example of Monitoring System Used in the
Fairdale Academic/Vocational High School Model

GROUP B	GROUP A		
Introduction	Introduction	SEPTEMBER	1
C-Ta-Ca 1,2	C-Ta-Ca 1,2		2
C-Ta-Ca 3	C-Ta-Ca 3		3
L-Ta-Ca 7	S-Ta-CA 4		7
S-Ta-Ca 4	L-Ta-Ca 7		8
L-Ta-Ca 8	S-Ta-Ca 5		9
S-Ta-Ca 5	L-Ta-Ca 8		10
L-Ta-Ca 9	S-Ta-Ca 6		13
S-Ta-Ca 6	L-Ta-Ca 9		14
S-Ta-Ca 10	S-Ta-Ca 10		15
L-TA-	C-Ta-M 1		16
C-Ta-M 1	L-Ta-		17
L-Ta-	C-Ta-M 2		20
C-Ta-M 2	L-Ta-		21
L-Ta-M 3	V-Ta-M 4		22
V-Ta-M 4	L-Ta-M 3		23
L-Ta-	V-Ta-M 5		24
V-Ta-M 5	L-Ta-		27
L-Ta-	V-Ta-M 6		28
V-Ta-M 6	L-Ta-		29
L-Ta-D 1,2	C-Ta-D 3		30
C-Ta-D 3	L-Ta-D 1,2	OCTOBER	1
L-Ta-D 5,6	C-Ta-D 9		4
C-Ta-D 9	L-Ta-D 5,6		5
L-Ta-	C-Ta-D 4,8		6
C-Ta-D 4,8	L-Ta-		7
C-Ta-D 10	C-Ta-D 10		8

Designed by Van Tomes



Date _____

_____
Vocational Teacher

Teacher

Students:

1.	9.
2.	10.
3.	11.
4.	12.
5.	13.
6.	14.
7.	15.
8.	

Lesson Plans:

Additional Plans:

from the Vocational teacher to the Learning Center Staff
FAIRDALE MODEL

Date _____

_____
Vocational Teacher

Teacher

Students:

1.	9.
2.	10.
3.	11.
4.	12.
5.	13.
6.	14.
7.	15.
8.	

Lesson Plans:

Additional Plans:

Task Assignment sheets are used in the Academic-Vocational Project. This competency - based curriculum has been developed and correlated with the existing skills continuum incorporated vocabulary and jargon of vocational education. Learning Center task assignments are related to the Employ-ability Skills and to the Life-survival Skills area. The task assignments that have been written are:

Attitudes and Safety
Observe General Safety Rules
Observe Office Safety Rules
Occupational Safety Laws
Practice Shop Safety
Match Interest with Occupations
Job Hunt A, b
Getting Ready for the Job Research
Applying for a Social Security Card
Getting a Work Permit
Application Form for a Job
Prepare for the Job Interview A, B, C, D
Interview for the Job
You have a Job
Develop Good Work Attitudes
Practice Good Work Habits
Compute Net Pay and Deductions From Paychecks
Operate the Apple II Computer
Write and Run Programs on the Apple II Computer
Operate the Printer with the Apple II Computer
Your Telephone Book
Want-ad Glossary
Mail-order Catalog
Road Maps
Your Birth Certificate
Registering to Vote

The proceeding pages are samples of Task Assignment Sheets used in Commercial Food level II in the Academic/Vocational Project at Fairdale High School.

COMMERCIAL FOODS

TASK: MAKE COFFEE

Introduction

There are many different types of coffee makers. In this task, you will learn the procedure for making coffee in the FlavoDrip 10 Cup Automatic Coffee Maker.

Objective(s)

Given equipment and supplies, make coffee in accordance the Instructor's Final Checklist. All items must be fully accomplished.

Learning Activities

1. Read and study Instruction Sheet I, "Making Coffee."
2. Read and study Instruction Sheet II, "Equipment for Making Coffee."
3. Read and study Instruction Sheet III, "Coffee Score Card."
4. Follow the regular routine for completing the Check-Out Activity.

Check-Out Activities

Given equipment and supplies, make coffee in accordance with the Instructor's Final Checklist. All items must be fully accomplished.

Instruction Sheet I

COFFEE MAKING

1. The two most common methods of brewing coffee in food service establishments are:

   a. Filtration

      (1) Hot water is poured slowly over the coffee.

      (2) Examples include the usual coffee urn (drip type), vacuum coffee makers, and the automatic coffee makers.

   b. Percolation

      (1) Water is placed below the coffee grounds in the coffee maker.

      (2) Heated water gradually passes over the basket of coffee grounds.

2. The choice of method will depend upon:

   a. the available equipment

   b. how much coffee is to be made

   c. the blend and kind of coffee

   d. the chemical composition of the water in the area

3. In all methods of making coffee the following precautions should be taken:

   a. Measure or weigh coffee accurately.

   b. Choose coffee of the correct blend and grind for the type of coffee maker used.

   c. Use freshly drawn and accurately measured water.

   d. Hold coffee at 185° to 190° and never allow it to boil. Coffee older than one hour cannot meet the high standards demanded by discriminating clientele.

   e. Clean the urn or other equipment immediately after each use. Follow the instructions that come with the equipment.

4. The number of servings per pound of coffee will vary with the following:

   a. the quality of the coffee blend

Instruction Sheet I (p.2)

b. the equipment used

c. the size of the cup used in service

5. High quality coffee properly made should, on the average, yield the following number of servings per pound of coffee:

a. 52 - 4½ oz. servings (appropriate amount to serve in a 6 oz. cup).

b. 47 - 5 oz. servings (appropriate amount to service in a 6½ oz. cup).

c. 39 - 6 oz. servings (appropriate amount to serve in an 8 oz. cup).

6. The following are directions for making coffee in an automatic coffee urn.

a. Clean the urn thoroughly before making fresh coffee.

b. Set the temperature control for the brewing temperature.

c. The light on the gauge stays on until the correct temperature is reached.

d. Soak the coffee filter bag in warm water. (The purpose of soaking is to remove the oils and stains from the bag).

e. Spread the ground coffee evenly on the urn filter using a circular motion for even distribution.

f. Place the filter filled with coffee in the top of the urn.

g. Accurate measuring is very important. The following are the amounts of coffee to use in proportion to water:

(1) 2 lbs. of coffee per 6 gallons of water

(2) 1 lb. of coffee per 3 gallons of water

(3) 3/4 lb. of coffee per 2¼ gallons of water

(4) ½ lb. of coffee per 1½ gallons of water

(5) ¼ lb. of coffee per 3/4 gallons of water

h. Since the coffee urn is tall, it is hard to lift a large quantity of water to this height. It is best to measure 3/4 gallons of hot water four times to fill the urn in order to eliminate burns.

i. Use a slow circular motion when pouring the water over the coffee, making sure that all of the coffee grounds are wet.

Instruction Sheet I (p. 3)

j. Allow about 10 minutes for the water to drain through the grounds; then remove the coffee grounds in the filter bag, and keep the coffee at a constant temperature of 185° F. to 190° F.

k. Stir before serving.

l. At no time should the urn be left empty while it is still connected to the power source.

7. The following are directions for making coffee by the vacuum method:

a. Place fresh water in lower bowl to level desired.

b. Place on heat.

c. If a filter is required, place in water and place over the filtering device.

d. Place the filter device into the upper bowl and add the desired amount of coffee.

e. After the water begins to boil, place the top bowl into the lower bowl.

f. When the water fills the upper bowl, turn off heat.

g. Stir the water in the upper bowl and leave the coffee to filter into the lower bowl.

h. Remove upper bowl with coffee grounds.

8. The following are directions for making percolated coffee:

a. This method is generally used for smaller amount of coffee.

b. Place cold water in the lower part of the percolator to the desired level.

c. Place coffee grounds in the basket.

d. Fit the stand securely into the heating element in the bottom.

e. Place the basket over the stand and cover with the lid.

f. Turn on the heating element and let the coffee perk until the original light shows that the perking process is complete or the coffee stops perking.

g. Remove the stand and the basket of spent grounds.

h. Stir before serving.

Instruction Sheet I (p. 4)

9. The following are directions for making coffee in an automatic drip making brewer.

   a. Put filter in coffee brewer.

   b. Put in an accurate measure of coffee.

   c. Place filter holder in slide.

   d. Place empty coffee pot in place.

   e. Push the button.

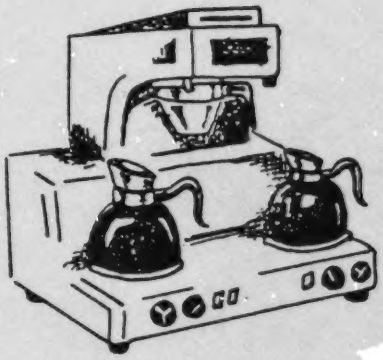
   f. The rest is done automatically.

Instruction Sheet II

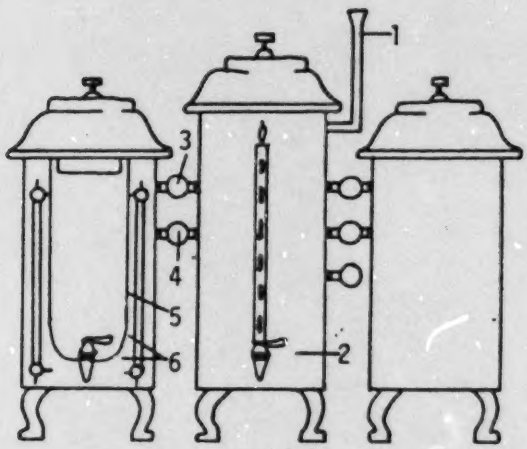
EQUIPMENT FOR MAKING COFFEE

Vacuum Coffee Maker

Percolator



Automatic Drip Maker



Urn Coffee Maker

1. Exhaust Valve
2. Boiler
3. Top Valve
4. Jacket Valve
5. Liner
6. Jacket

Instruction Sheet III

COFFEE SCORE CARD

Coffee, regardless of the method used for making, should meet the following standard.

	Student Evaluation			Instructor Evaluation		
1. Drip coffee	Good	Fair	Poor	Good	Fair	Poor
a. clear in color						
b. pleasing flavor and aroma						
c. no grounds						
d. color, rich deep brown						
e. a silver spoon lowered into the bottom of the cup should be seen						
2. Percolated coffee						
a. clear in color						
b. pleasing flavor and aroma						
c. no grounds						
d. color, a rich deep brown						
e. a silver spoon lowered into the bottom of the cup should be seen						

Instruction Sheet III (p. 2)

3. Vacuum coffee	Student Evaluation			Instructor Evaluation		
	Good	Fair	Poor	Good	Fair	Poor
a. clear in color						
b. pleasing flavor and aroma						
c. no grounds						
d. color, a rich deep brown						
e. a silver spoon lowered into the bottom of the cup should be seen						

Check-Out Activity

Directions: Follow this procedure to make coffee:

1. Unplug coffee maker.
2. Rinse glass container thoroughly.
3. Rinse basket thoroughly.
4. Place one coffee filter in basket.
5. Open coffee can and put two scoops of coffee into coffee filter.
6. Fill glass container with "cold" H_2O (Water) to the top.
7. Pour water into top of coffee maker.
8. Plug coffee maker into wall socket.
9. Clean up your mess.
10. All above items must be complete to insure a good cup of coffee.

Instructor's Final Checklist

The student should be evaluated according to the performance ratings in the box. Indicate on a separate sheet of paper whether the student's performance for each item is Fully Accomplished, Partially Accomplished, Not Accomplished, or under certain circumstances, Not Applicable.

Performance Level: All items must receive a rating of FULLY ACCOMPLISHED (or Not Applicable). If any items are rated Not Accomplished or Partially Accomplished the student and instructor will decide which learning activities must be repeated.

Fully Accomplished	Partially Accomplished	Not Accomplished	Not Applicable

Did the Student:

1. Unplug the coffee maker	( )	( )	( )	( )
2. Rinse glass container thoroughly	( )	( )	( )	( )
3. Rinse basket thoroughly	( )	( )	( )	( )
4. Place one coffee filter in basket	( )	( )	( )	( )
5. Open coffee can and put two scoops of coffee into coffee filter	( )	( )	( )	( )
6. Fill glass container with "cold" H_2O (water) to the top	( )	( )	( )	( )
7. Pour water into top of coffee maker	( )	( )	( )	( )
8. Plug coffee maker into wall socket	( )	( )	( )	( )
9. Clean up the mess	( )	( )	( )	( )

TASK ASSIGNMENT SHEET #

TASK:

Introduction

Objective(s)

Learning Activities

Check-Out Activities

EXAMPLES OF FORMS

USED IN THE

LEARNING RESOURCE CENTERS

LEARNING CENTER MEMO

DATE: _____

Vocational Teacher:_____

Students absent _____

_____

_____

_____

_____

The students were assigned:

They completed:

Comments:

DATE: _____

Vocational Teacher:_____

Students Absent _____

_____

_____

_____

_____

The students were assigned:

They completed:

Comments:

DATE	WHAT I DID IN THE LEARNING CENTER TODAY	INITIAL

LEARNING CENTER PROGRAM PLAN

NAME _____ PROGRAM _____ GRADE _____ DATE _____

TABE TEST SCORES: READING: VOCABULARY _____ COMPREHENSION _____ TOTAL _____

MATH: COMPUTATION _____ CONCEPTS _____ TOTAL _____

LANGUAGE: _____ SPELLING: _____

OBJECTIVES: (What I want to accomplish by working in the Learning Center)

1. 4.

2. 5.

3. 6.

PRESCRIPTION:

EVALUATIVE COMMENTS:

INSTRUCTOR'S SIGNATURE _____

STUDENT'S SIGNATURE _____

REFERRAL TO LEARNING CENTER

(Complete and return to Area Center Coordinator)

_____ needs assistance with
Student's name

_____ related to _____.
Basic skill Class

Specific concerns: _____.
Problems, textbook-pages, beginning date, time

_____ _____
Date Vocational Teacher (signature)

* *

_____
Prescription: Type of remediation needed

_____
Approximate number of sessions needed

_____
Beginning date Time

_____ _____
Date Learning Center Teacher (signature)

* *

PROGRESS REPORT

Complete this section when there is a change in plans, or completion of activities.

Comments: _____

_____

_____

_____

_____

_____

_____ _____
Date Learning Center Teacher (signature)

Math

STUDENT RECORD SHEET

Name

Date	Skill	Material Used	Frames, Pages Units or Chapters	* S/U	Added Practice

* Satisfactory or Unsatisfactory

DAILY SIGN-IN SHEET

LE[illegible]NG CENTER

Date _____

Student's Name	Shop or Class	Student's Name	Shop or Class

TABE TEST RESULTS:

Reading _____ _____ _____

Math _____ _____ _____

Language _____ _____ _____

_____ PRESCRIPTION SHEET

_____
Name

Date Enrolled in
Learning Center _____

SKILL AREA	MATERIALS	COMPLETED

1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10

ATTENDANCE OF STUDENTS IN LEARNING LAB

:OP

:STRUCTOR

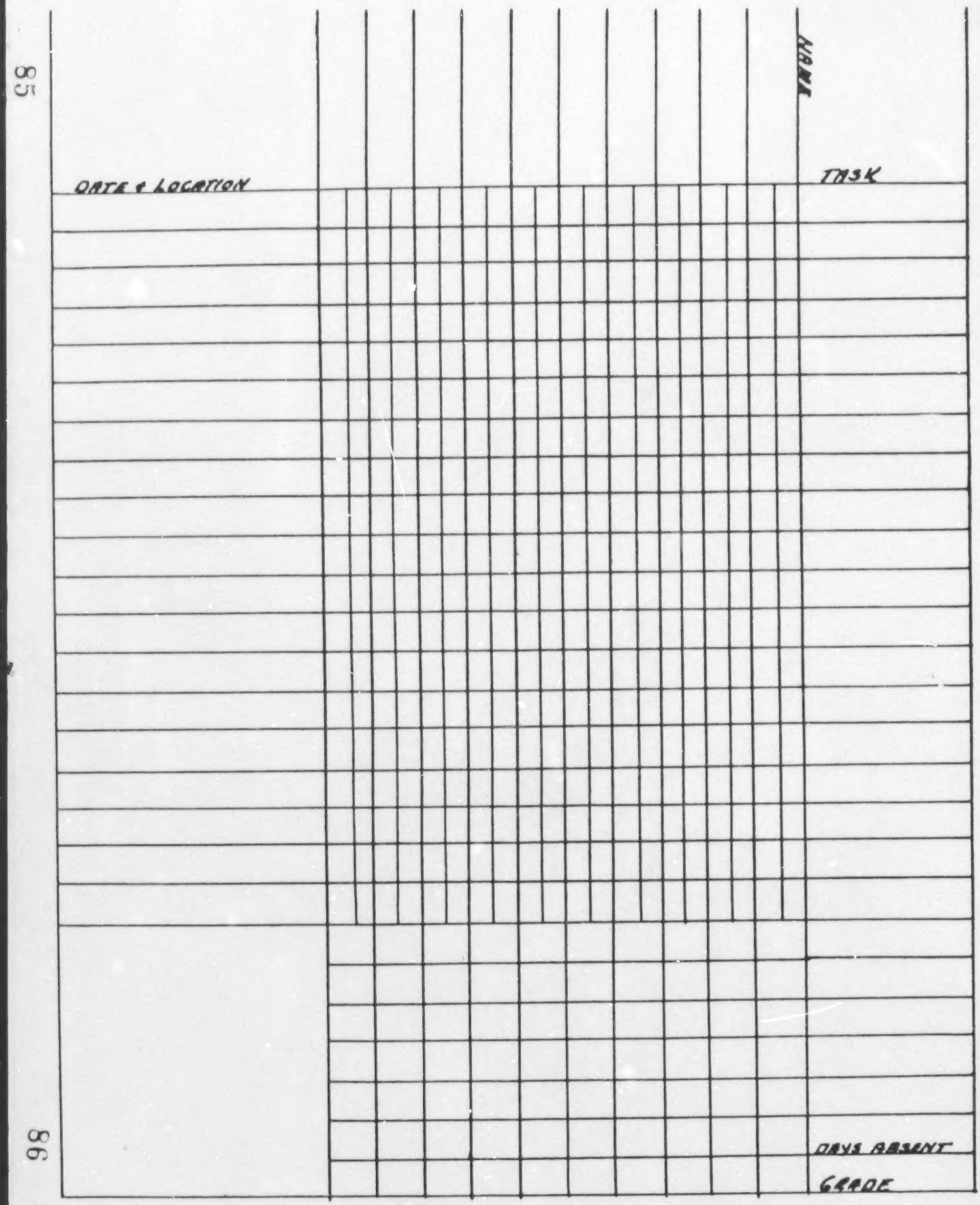
☐ SECONDARY

☐ POST SECONDARY

REMARKS:

'UDENTS NAME	DAY TO BE IN LAB	TIME TO BE IN LAB

DATES OF ATTENDANCE LEARNING LAB INSTRUCTOR _____


NAME
TASK
DATE & LOCATION
DAYS ABSENT
GRADE

BIBLOGRAPHY

Books

Coburn, Peter; Kelmann, Peter; Roberts, Nancy; Snyder, Thomas, F.F. Watt, Daniel H., and Werner, Cheryl. Practical Guide to Computers in Education. Reading, MA: Addison-Wesley Publishing Co., 1982.

Guidelines for Evaluating Computerized Instructional Material. Reston, VA: National Council of Teachers of Mathematics, 1981.

Mims, Forrest M. III. Beginners Guide to Personal Computers. Fort Worth, TX: Radio Shack, 1981.

Naiman, Adeline. Microcomputers in Education: An Introduction. Chelmsford, MA: Northeast Regional Exchange, January, 1982.

Radio Shack Educational Software Sourcebook. Fort Worth, TX: Education Division, Radio Shack, 1982.

Van Loves Apple II/III Software Dictionary. Kansas City, MO: Vital Information, Inc., 1981.

Zaks, Rodney. Don't (or How to Care for Your Computer). Berkeley, CA: Syhex, Inc., 1981.

Magazines

Alexander, Wilma Jean. "The Problems of Software,"p. 39.
Nasman, Leonard. "Computers Mean New Decisions," p. 36.
Simick, Jack. "Computers Transform an Industry," p. 23.
Uthe, Elaine R. "The Computers in Our Lives," p. 26.
VOCED (Journal of the American Vocational Association). April, 1982, Volume 57, Number 3.

"The Computing Primer" - "(Electronic's Learning's Guide to Computers and Computing - for the Absolute Novice)," "Part II: How a Basic Miciocomputer System Works," Electronic Learning. November/December, 1981, Volume 1, Number 2, p. 24.

Dillon, Nancy. "Microcomputers: A Challenge to Home Economists," Forecast for Home Economics. May/June, 1982, p. 36.

"Microcomputers in the Classroom," Today's Education (The Journal of the National Educational Association. April/May,1982, Volume 71, Number 2, pp. 13-31.

Conferences

Hansen, Dr. Thomas and HolzNagel, Don. Selecting, Purchasing and Managing Microcomputers in Schools. (Consultants to 1980 MECC NSF - IDSE Project). Humiro, 300 North Washington Street, Alexandria, Virginia, 22314.

Kentucky Department of Education, Bureau of Instruction, Microcomputer Conference: Focus on Instructional Software. November 8, 1982.